

PRIME HOOK

NARRATIVE REPORT

January-December 1966

NARRATIVE REPORT
PRIME HOOK NATIONAL WILDLIFE REFUGE
JANUARY - DECEMBER, 1966

PERMANENT PERSONNEL

Jerome M. Srednicki (EOD 10/17/66)	Asst. Refuge Manager
William H. Sipple (Trans. from Bombay Hook). . . .	Maintenanceman
Alice M. Wright (EOD 9/1/66)	Clerk-Typist
Adele S. Jones (Resigned 5/31/66).	Clerk-Steno

Prime Hook National Wildlife Refuge is administered through the Bombay Hook National Wildlife Refuge, with Gordon T. Nightingale, Refuge Manager-in-Charge of both refuges.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH & WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES & WILDLIFE
SUSSEX COUNTY, DELAWARE

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NARRATIVE REPORT
PRIME HOOK NATIONAL WILDLIFE REFUGE
JANUARY - DECEMBER, 1966

I. GENERAL

A. Weather Conditions

<u>Month</u>	<u>Precipitation</u>			<u>Temperature</u>	
	<u>Snow</u>	<u>Total</u>	<u>Normal</u>	<u>Maximum</u>	<u>Minimum</u>
January	26.0	2.40	2.94	63	-6
February	2.5	3.64	3.50	63	01
March		1.38	4.34	76	15
April		3.53	3.29	84	28
May		2.75	2.93	85	28
June		3.06	4.14	93	41
July		1.25	5.74	100	51
August		1.53	5.74	95	53
September		5.72	3.69	94	43
October		5.13	4.13	80	26
November		1.66	3.72	69	24
December	7.5	3.68	3.94	74	14
Total	36.0	35.73	47.18		
Extremes				100	-6

These weather data were taken from USDC Weather Bureau records for Lewes, Delaware, approximately 4.5 miles south of the southern end of the Refuge. The normal precipitation is based on a 9-year average (1954-1962) at Lewes.

B. Habitat Conditions

1. Water. No water level control is practiced as the Refuge still is in the progress of acquisition.

Precipitation in 1966 was about 8" below normal, continuing the dry cycle of the past few years as reported in previous narratives. Marshes within the refuge acquisition area were extremely dry during the summer months of June, July, and August.

2. Food and Cover. Waterfowl in the area utilized cropland on and adjacent to the Refuge and the Delaware Bay shoreline as the major feeding areas from fall harvest through the winter. Heavy hunting pressure during the fall and early winter, resulted in low waterfowl utilization of marsh habitat. Greatest utilization of marsh habitat for food and cover occurred during the Spring, Summer, and early fall.

II. WILDLIFE

A. Migratory Birds

1. Waterfowl.

- a. Canada Geese. During the month of January, there were no Canada Geese present on the refuge area. This may be attributed to a combination of heavy snowfall, high hunting pressure, and low temperatures. Canada Geese appeared on the Refuge in early February in small numbers, marking the beginning of the northward migration; and increased in numbers to 1,000 during the month of March; then tapering off to a resident feral flock of 50-60 birds in April.

Fall migrants were first noted the second week in October, when over 3,000 geese arrived. Canada Goose numbers rose to over 24,000 by early November. Immediately after the start of the Waterfowl Hunting season (11/4/66), goose numbers dropped to nearly zero. During the split in the duck season (11/5 - 12/14/66), up to 14,000 geese used the Refuge. They departed shortly after duck season resumed.

Feeding by geese was largely in agricultural fields, both on and off the refuge acquisition area.

- b. Snow Geese. No Snow Goose use of the Refuge during Winter and Spring was noted. Fall use increased over the 1965 total, with a peak of 75 birds noted.
- c. Ducks. The number of Ducks wintering within the refuge marshes and creeks ranged from 250 to 500; being almost exclusively Blacks, Mallards, and Green-winged Teal. Coincident with the spring thaw and northward migration, the population increased to over 3,700 birds in late March. By early May, the breeding population had stabilized around the 150 mark. Production of an estimated ~~228~~²⁴⁸ young occurred: 26 Mallards, 91 Blacks, 36 Gadwall, 3 Pintain, 72 Blue-winged Teal. ⁷⁶

Fall duck use was improved over 1965. A peak of 2,245 birds were reported just prior to the hunting season - with a sharp reduction after its inception. A second peak of 12,700 birds occurred in the second week of December, during the split in the duck season.

B. Upland Game Birds

Bobwhite are the only native upland game bird found on the area. Verbal reports from hunters indicate an excellent local harvest. An estimated 200 quail occur on the Refuge.

CANADA GEESE

STATUS OF MANAGEMENT OBJECTIVES & ACTUAL USE

GOOSE USE DAYS

	Objective Goals	Actual 1966 Use	Ratio Goal to Use
Spring 2/16-4/30	400,000	34,250	1 to .1
Summer 5/1-8/31	(5,000)	-0-	-
Fall Sept.-Dec.	530,000	^{692,275} 691,431	1 to 1.3
Winter 1/1-2/16	Min. (65,000)	1,360	-
Total	1,000,000	727,071 ^{727,885}	

GOOSE PEAK POPULATIONS

	Objective Peaks	Actual 1966 Peak	Ratio Goal to Use
Spring	-	1,000	-
Summer	-	-0-	-
Fall	12,000	24,510	1 to 2
Winter	-	150	-

Goose Production - not to be encouraged.
Geese Produced - none - except feral geese.

DUCKS

STATUS OF MANAGEMENT OBJECTIVES & ACTUAL USE

DUCK USE DAYS			
	Objective Goals	Actual 1966 Use	Ratio Goal to Use
Spring 2/6-5/15	800,000	184,876	1 to .2
Summer 5/16-8/31	400,000	27,863	1 to .1
Fall 9/1-12/31	2,100,000	^{170,537} 171,381	1 to .1
Winter 1/1-2/15	200,000	49,335	1 to .2
Total	3,500,000	^{433,455} ^{432,611}	1 to .1

DUCK PEAKS AND PRODUCTION

	Objective Population	Actual 1966 Peak	Ratio Goal to Use
Spring	20,000	3,775	1 to .2
Summer	-	546	-
Fall	30,000	12,700	1 to .4
Winter	-	3,775	-

Ducks Produced ²³³ -228

WATERFOWL DAYS OF USE PER ACRE OF WATERFOWL USE HABITAT (1)

432,611
Duck Use Days (1966)

8,000
Acres of Duck Use
Habitat (Est.)

54.0
Duck use per Acre
of Waterfowl Habitat

727,585
727,071
Goose Use Days (1966)

8,000
Acres of Goose
Use Habitat (Est.)

98.0
90.0
Goose Use per Acre
of Waterfowl Habitat

Duck Production per Wetland Acre 0.21

(1) Includes only Feeding & Resting Habitat.

Two Ringnecked Pheasants (both males) were observed in the early fall; both were probably remnants of the game farm once located within the Refuge.

C. Big Game Animals

White-tailed Deer are the only species of big game animal on the Refuge. An estimated 40 head use the acquisition area.

D. Fur Animals, Predators, Rodents, and other mammals

Muskrats are present in the acquisition area, with moderate trapping pressure. Population and removal numbers are presently unknown.

Otter signs were frequently observed on the refuge area, and it is believed their numbers are increasing.

Raccoon, skunk, opossum, and Grey Squirrel were infrequently observed on the area.

Cottontail rabbits are abundant in suitable habitat areas. One group of hunters reported removing over 100 rabbits from within the acquisition area.

E. Hawks

Red-tailed Hawk, Marsh Hawk, Osprey, Short-eared Owls, Barn Owls, Sparrow Hawk, Rough-legged Hawk, were observed as individuals or in small numbers.

F. Other Birds

Progress is being made in compiling observations for a refuge bird list. Observations during the summer included the following:

<u>Number</u>	<u>Species (Common Name)</u>	<u>Date</u>	<u>Location</u>
20	Common Egrets	Aug. 6	Broadkill Beach
28	Cattle Egrets	Aug. 7	Fowlers Beach
1	American Bittern	Aug. 6	Broadkill Beach
4	Glossy Ibis	May 7	Broadkill Beach
5	Mute Swan	Aug. 1	Fowlers Beach
1	Whistling Swan	May 2-7	Fowlers Beach
1	Rough-legged Hawk	Aug. 7	Slaughters Beach
1	King Rail	Aug. 6	Broadkill Beach
1	Semipalmated Plover	Aug. 7	Fowlers Beach
3	Ruddy Turnstone	Aug. 6	Broadkill Beach
1	Least Tern	Aug. 6	Broadkill Beach
9	Black Skimmer	Aug. 6	Broadkill Beach
	Short-billed Marsh Wren	All Summer	Broadkill Beach
	Henslow's Sparrow	All Summer	Broadkill Beach
2	Sharp-tailed Sparrow	Aug. 6	Broadkill Beach

In addition to the preceeding list, the Delmarva Ornithological Society held its annual Christmas Bird Count and a list of species and numbers is as follows:

CHRISTMAS BIRD COUNT
PRIME HOOK NATIONAL WILDLIFE REFUGE AND VICINITY
December 23, 1966

Number	Species	Number	Species
1	Common Loon	1	Clapper Rail
16	Red-throated Loon	1	Virginia Rail
2	Horned Grebe	11	Ruddy Turnstone
21	Great Blue Heron	1	American Woodcock
1	American Bittern	5	Common Snipe
385	Canada Goose	1	Purple Sandpiper
1	Brant	15	Dunlin
83	Mallard	32	Sanderling
525	Black Duck	35	Great Black-backed Gull
7	Pintail	200	Herring Gull
1	Shoveler	75	Ring-billed Gull
9	Ring-necked Duck	66	Mourning Dove
40	Greater Scaup	1	Barn Owl
2	Bufflehead	4	Great Horned Owl
1	King Eider	2	Barred Owl
1	Old-Squaw	5	Short-eared Owl
28	White-winged Scoter	9	Belted Kingfisher
94	Surf Scoter	17	Flicker
26	Common Scoter	2	Pileated Woodpecker
1	Hooded Merganser	7	Red-bellied Woodpecker
1	Common Merganser	4	Hairy Woodpecker
39	Turkey Vulture	25	Downy Woodpecker
7	Red-tailed Hawk	62	Horned Lark
1	Rough-legged Hawk	6	Tree Swallow
6	Sparrow Hawk	32	Blue Jay
14	Marsh Hawk	42	Crow
18	Bobwhite	2	Brown-capped Chickadee
5	Rufous-sided Towhee	91	Carolina Chickadee
18	Tufted Titmouse	8	Purple Finch
1	White-breasted Nuthatch	30	House Finch
1	Brown Creeper	116	American Goldfinch
4	Winter Wren	38	Savannah Sparrow
8	Carolina Wren	8	Seaside Sparrow
42	Mockingbird	128	Slate-colored Junco
1	Catbird	53	Tree Sparrow
5	Brown Thrasher	127	Field Sparrow
100	Robin	5	White-crowned Sparrow
2	Hermit Thrush	353	White-throated Sparrow
1	Eastern Bluebird	2	Fox Sparrow
18	Golden-crowned Kinglet	85	Swamp Sparrow
2	Ruby-crowned Kinglet	95	Song Sparrow

Christmas Bird Count (cont.)

<u>Number</u>	<u>Species</u>	<u>Number</u>	<u>Species</u>
2	Cedar Waxwing	1	Snow Bunting
100,550	Starling	1	Loggerhead Shrike
1,403,000	Redwinged Blackbird	73	Myrtle Warbler
5	Rusty Blackbird	157	House Sparrow
50	Brewer's Blackbird	52	Eastern Meadowlark
50	Boat-tailed Grackle	25	Brown-headed Cowbird
150,000	Common Grackle	76	Cardinal

Assistant Manager Srednicki and Maintenanceman Sipple escorted the parties involved and assisted in identification.

G. Fish

White Perch, Largemouth Bass, Carp, Striped Bass, Blue Crabs, etc., are known to occur within the refuge area. A heavy Carp population is present in Prime Hook Creek and ponds adjacent to it.

Fishing pressure was light with emphasis on Blue Crabs near the public roads; and lesser pressure on Largemouth Bass and White Perch in Prime Hook Creek; and small scale non-commercial net fishing for White Perch and Striped Bass in Petersfield Ditch.

H. Reptiles

Snapping, Diamond Backed, Box, and Painted turtles were observed as were the Black Racer, Garter, and Grass snakes.

I. Disease

Canada Geese - from dead geese picked up and carcasses observed from the air, it is estimated that 75 geese died in the acquisition area during February and March. They are assumed to have died from Lead Poisoning; the same as specimens submitted to Patuxent from Bombay Hook Refuge and other mortality areas in Delaware.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Real Property. Nine items of real property have been removed from refuge property by sale or salvage, for a total removal of 167 items.

There are 39 items of real property that are presently on the Refuge. Of the 39, seven have been sold and are awaiting removal; three are to be salvaged in the near future; five kept temporarily; and 24 are in reservation occupancy and will be generally disposed of when vacated.

Real Property removal and site cleanup has been a major project for the Refuge this year. (See photos.)

2. Fence & Post. 22,862 feet of permanent exterior boundary fencing has been completed this year, for a total of 32,102 feet fenced.

Permanent exterior boundaries and public road side boundaries have been posted, as required, with U. S. Government signs at 1/10 mile intervals. These signs do not prohibit public trespass.

3. General Cleanup. Three major and many minor dumps on recently acquired tracts have been removed or covered with fill and graded over. Several dump sites remain to be removed.
4. Buildings. Quarters #1, on Tract 77, was occupied in mid - October by Assistant Manager Srednicki. The inside walls were painted and a wall in the bathroom repaired. 1,400 cu. yards of gravel was placed on the access road to the shop and Quarters. In October, a new gas heater was installed in the shop.
5. Cooperative Work. Refuge personnel assisted persons from the Branches of Realty, Engineers, and Management and Enforcement in connection with Bureau functions in and around the Refuge.

B. Plantings

94.8 acres of refuge land were planted [with corn (52.0), and Permanent Grass (42.8)] by 3 Cooperative Farmers this past year. The refuge share was 4.7 acres of corn (unharvested) and the establishment of 40.8 acres of permanent grass for nesting and wildlife cover.

Private landowners within the acquisition area continued to carry on normal farming practices. Small dairy and beef operations occur. Large acreages of corn, soybeans, lima beans, peas, and wheat were grown.

- C. Collections and Receipts. None.

D. Control of Vegetation

Farmers within the refuge acquisition area apply normal practice agricultural chemicals for the control of weeds and insects in cultivated crops.

- E. Planned Burning. None.

- F. Fires. None

IV. RESOURCE MANAGEMENT

A. Grazing.

None on refuge property except under outstanding agricultural reservations. Some dairy and beef operations occur within the refuge boundary on land not yet acquired.

B. Haying.

None on refuge property, except under outstanding agricultural reservations. Some haying occurs on private land within the refuge acquisition area.

C. Fur Harvest. Unknown.

D. Timber Removal.

None on refuge property. Large scale removal of pine pilings on Tract 86, not yet acquired.

E. Commercial Fishing.

None on refuge property.

F. Other Uses. None.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report.

Wildlife Management Study - PH-1, titled "A Preliminary Survey of Mosquito Production on the Prime Hook National Wildlife Refuge" has been submitted.

Objective: To determine what species of mosquitoes are produced, in what habitat types, and in what relative abundance.

Abstract: A survey of mosquito production was initiated on the Prime Hook National Wildlife Refuge during the spring and summer of 1966. By means of dipping for larvae at a total of 119 dip stations, and examination of captives at one New Jersey light trap, sufficient data were assembled to indicate that Aedes sollicitans breeds in the portions of marsh at the northern and southern ends of the Refuge which are affected by tidal action. It was learned that Aedes cantator and Culex salinarius breed throughout fresh, brackish, and salt water habitats. Very large numbers of Culex salinarius were taken in June and July.

VI. PUBLIC RELATIONS

A. Recreational Uses.

The majority of recreational use within the proposed boundary, center around waterfowl hunting, upland game hunting, Blue Crab fishing, and fresh water fishing - in that order of importance. Boating use was almost entirely connected to fishing or hunting.

Although Prime Hook has been designated an R/C fee collection area, no fees were collected in calendar year 1966 due to incomplete acquisition and total impracticability of collection.

B. Refuge Visitors.

Regional Office Personnel from the Division of Realty and Engineering made frequent visits to the area in connection with land acquisition. Personnel from Bombay Hook Refuge assisted in various projects and aerial waterfowl censuses.

Management and Enforcement personnel made frequent ground patrols through the area and assisted in aerial waterfowl counts. Various land owners, state personnel, and other persons having business with the Refuge, contacted the office.

C. Refuge Participation.

Refuge Manager Nightingale presented a check for \$6,338 to the Levy Court of Sussex County; due the County under the Refuge Revenue Sharing Act.

The Assistant Refuge Manager continued contracts with various landowners and interested parties in the Prime Hook Refuge area in regard to approved refuge boundaries, public hunting, trapping, fishing, sale of surplus buildings, etc.

D. Hunting.

No controlled hunting program on refuge lands. Hunting continues within the entire acquisition area.

E. Violations.

Two individuals were apprehended within the acquisition area by the Assistant Manager. Neither man had a State license nor Duck Stamp, both were shooting after hours. Cases pending.

F. Safety.

Personnel assigned to Prime Hook Refuge regularly attended Staff Safety Meetings at Bombay Hook Refuge; Assistant Manager Srednicki is a member of the Safety Committee.

No accidents have occurred at Prime Hook since its inception. Maximum effort will be maintained to insure the continued success of this program. Calendar days since last accident and last lost time accident - 596.

VII. OTHER ITEMS

A. Items of Interest.

1. Land Acquisition.

Reapproval of MBCC June 24, 1964
 Area 10,708 acres
 Ownerships 77 cases
 Land Classification.
 19% Agricultural (2,071 acres)
 11% Timber & Brush (1,195 acres)
 68% Marsh & Water (7,272 acres)
 2% Beach (170 acres)

Through adjustments in boundaries in purchase agreements, and a reassessment of primary needs, the acquisition area objectives have been reduced to approximately 10,000 acres, as follows: (See graph following)

Area (approximately) 10,000 acres
 Ownerships 66 cases
 Land Classification.
 15% Agricultural (1,533 acres)
 11% Timber & Brush (1,125 acres)
 73% Marsh & Water (7,272 acres)
 1% Beach (70 acres)

Status of Land Acquisition as of December 31, 1966, in relation to current objectives:

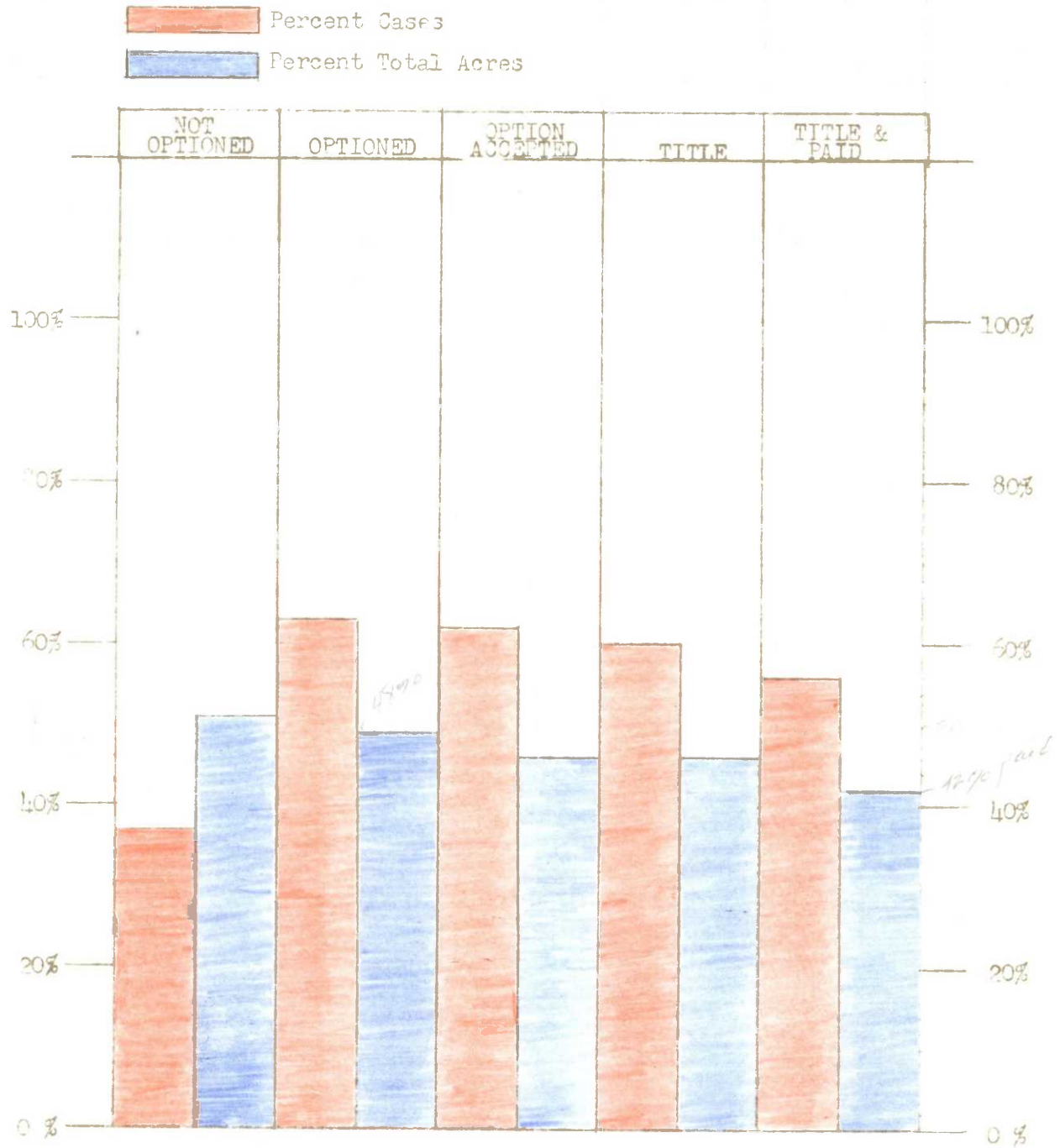
	<u>Cases</u>	<u>Acres</u>	<u>% Area</u>	<u>% Cases</u>
Optioned, Title, Paid	37	4,241.0	42	56
Optioned, Title	40	4,655.9	46	60
Optioned & Accepted	41	4,666.7	46	62
Optioned	42	4,889.6	49	63
Not Optioned	24	5,110.4	51	37

Six (6) cases representing 677.9 acres were optioned this year. Acquisition has proceeded to a point where court action is desirable and probable in certain cases.

2. Personnel.

Maintenanceman William H. Sipple was transferred from Bombay Hook.

STATUS OF LAND ACQUISITION UNDER
CURRENT OBJECTIVES
December 31, 1966



Mrs. Adele Jones resigned May 31, 1966.

Miss Alice Wright entered on duty, as Clerk-typist, September 1.

Mr. Jerome M. Srednicki entered on duty as Assistant Refuge Manager, October 17, 1966.

Student Assistant Thomas Mitchell was employed from June 20 to August 31, 1966, and worked primarily on the mosquito survey project, with some time spent on waterfowl observations and banding. His report is on file at Refuge Headquarters.

3. Credits: Assistant Manager Clayton Hardy, part of NR forms and Biological data; Biologist Stewart Givens, part of NR forms and Biological data; Assistant Manager Srednicki, text and part of NR forms; Maintenance man Sipple, basic information; Virginia Baughman, typing NR forms; Alice Wright, typing NR forms, rough draft, and text.

B. News Articles. Appended

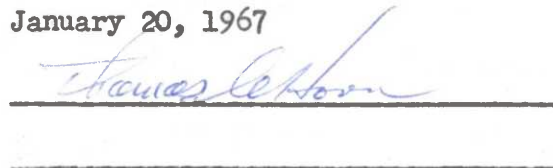
C. Photographs. Appended


Respectfully submitted,



GORDON T. NIGHTINGALE
Refuge Manager-in-Charge
Bombay Hook & Prime Hook
National Wildlife Refuges

January 20, 1967





W A T E R F O W L

REFUGE Prime Hook

MONTHS OF January TO April, 19 66

(1) Species	(2) Weeks of reporting period									
	1/1 - 7	8 - 14	15 - 21	22 - 28	29 - 2/5	6 - 12	13 - 19	20 - 26	27 - 3/4	5 - 11
	1	2	3	4	5	6	7	8	9	10
Swans:										1
Whistling										
Trumpeter										
Geese:					0	130	150	200	700	1,000
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:	50	50	50	100	0	100	100	300	400	400
Mallard	200	200	100	400	0	825	825	500	350	350
Black										
Gadwall										
Baldpate										
Pintail				2	0	2,800	2,800	2,000	1,500	1,500
Green-winged teal	200	200	100	3	0	50	50	750	1,500	1,500
Blue-winged teal										
Cinnamon teal										
Shoveler								10	20	20
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
	450	450	250	505	0	3,905	3,925	3,760	4,470	4,771

3 -1750a
 Cont. NR.
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Prime Hook MONTHS OF January TO April, 19 66

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	12-18 11	19-25 12	26-1/1 13	1-8 14	9-15 15	16-22 16	23-29 17	30 18		
Swans:										
Whistling	1	2	3				1	1	57	
Trumpeter										
Geese:										
Canada	1,000	1,000	900				10	10	35,640	
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	300	200	80	50	50	40	10	10	15,970	
Black	300	300	250	200	200	100	20	20	35,860	
Gadwall							2	2	16	
Baldpate			50						350	
Pintail	1,500	20	20	20	10				85,204	
Green-winged teal	1,500	2,000	2,500	1,000	1,000	500	320	320	92,531	
Blue-winged teal			20	20	20	20			560	
Cinnamon teal										
Shoveler										
Wood-	20	10	10			10	10	10	780	
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy						100	10	10	780	
Other										
Coot:	4,621	3,532	3,833	1,290	1,280	770	383	383	267,748	

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	57	3	0
Geese	35,640	1,000	0
Ducks	232,051	3,775	0
Coots	0	0	0

SUMMARY

Principal feeding areas Fresh water marsh between
Prime Hook Beach and Broadkill Beach

Principal nesting areas _____

Reported by C. M. Hardy

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
 1953

W A T E R F O W L

REFUGE Prime Hook

MONTHS OF May 1 TO August 31, 19 66

(1) Species	(2) Weeks of reporting period									
	5/1 - 7 1	8 - 14 2	15 - 21 3	22 - 28 4	29 - 6/4 5	5 - 11 6	12 - 18 7	19 - 25 8	26 - 7/2 9	3 - 9 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada										
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	30	30	30	30	30	30	30	30	30	30
Black	20	20	20	20	20	20	20	20	20	20
Gadwall	12	12	12	12	12	12	12	12	12	12
Baldpate										
Pintail	2	2	2	2	2	7	7	7	7	7
Green-winged teal										
Blue-winged teal	80	80	80	80	80	80	80	80	90	90
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
TOTAL:	144	144	144	144	144	149	149	149	159	159

50 - 60 feral geese only.

3 -1750a
 Cont. NR-1
 (Rev. March 1953)

WATERFOWL
 (Continuation Sheet)

REFUGE Prine Hook MONTHS OF May 1 TO August 31, 19 66

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods:Estimated seen : total	
	10 - 16 : 11	17 - 23 : 12	24 - 30 : 13	31 - 8/6 : 14	7 - 13 : 15	14 - 20 : 16	21 - 27 : 17	28 - 31 : 18			
Swans: Mute	5	5	5						105		
Whistling											
Trumpeter											
Geese:											
Canada											
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	30	30	30	25	185	170	175	160	7,255	2	26
Black	20	20	70	150	150	170	150	151	7,024	13	96
Gadwall	12	12	15	15	25	25	25	25	1,843	4	36
Baldpate											
Pintail	7	7	7	7	10	14	10	10	761	1	3
Green-winged teal						16	10	10	180		
Blue-winged teal	100	100	100	150	165	165	160	160	12,960	12	72
Cinnamon teal											
Shoveler											
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											
Coot:	174	174	227	247	535	520	530	546	30,128	32	228 233
				(over)							

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	105	5	-
Geese	Feral: geese only		
Ducks	30,023	546	²³³ 228
Coots	-	-	-

SUMMARY	
Principal feeding areas	Ponds S. of Fowlers Beach and N. of Broadhill Beach Rd.
Principal nesting areas	same as above.
Reported by	C. M. Hardy

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

WATERFOWL

REFUGE PRIME HOOK

MONTHS OF September 1. TO December 31, 1966

(1) Species	(2) Weeks of reporting period									
	Sept.					Oct.				
	1 - 7	8 - 14	15 - 21	22 - 28	29 - 5	6 - 12	13 - 19	20 - 26	27 - 2	3 - 9
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling								5		
Trumpeter										
Geese:										
Canada	16	30	40	30	17	3,250	13,200	16,850	23,800	24,500
Cackling										
Brant										
White-fronted										
Snow									7	10
Blue										
Other										
Ducks:										
Mallard	160	150	25	75	125	200	335	390	425	450
Black	180	225	100	100	150	250	150	350	450	700
Gadwall						100	75	250	30	50
Baldpate								125		50
Pintail		30		20	125	220	80	130	135	500
Green-winged teal	10	75	40	40	30	110	50	220	480	350
Blue-winged teal	100	100	50	50	250	100	20			
Cinnamon teal										
Shoveler	20		20	20	10	20	40	20	20	25
Wood	20	50							100	100
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy									16	20
Other										
TOTAL USE DAYS	2,412	4,620	1,925	2,345	4,949	29,750	97,650	128,345	178,241	187,285

3 -1750a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE PRIME HOOKMONTHS OF September 1. TO December 31, 19 66

(1) Species	Dec. (2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimat : seen : total	
	10 - 16 11	17 - 23 12	24 - 30 13	1 - 7 14	8 - 14 15	15 - 21 16	22 - 28 17	29 - 31 18			
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	100	200	-0-	300	14,100	200	1,500	1,500	691,431		
Cackling											
Brant											
White-fronted											
Snow		75					20	20	844		
Blue											
Other											
Ducks:											
Mallard	150	200	20	50	1,600				30,485		
Black	150	500	50	50	1,250	100	400	400	37,285		
Gadwall									3,535		
Baldpate	20								1,365		
Pintail	50			50	700				14,280		
Green-winged teal	150		20	25	300				13,300		
Blue-winged teal									4,680		
Cinnamon teal											
Shoveler	20				350				3,955		
Wood									1,890		
Redhead											
Ring-necked											
Canvasback											
Scaup					8,500				59,500		
Goldeneye											
Bufflehead											
Ruddy									252		
Other											
Coot:											
TOTAL USE DAYS	4,480	6,825	630	3,325	187,600	2,100	13,440	5,760	862,812		

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	35	5	-
Geese	692, 275	24,500	-
Ducks	172, 381	12,700	-
Coots	0	0	-

SUMMARY

Principal feeding areas Adjacent cropland, Marsh

Principal nesting areas ...

Reported by Stewart W. Givens, Acting Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.

1953

5RF 11/66

5RF-10/64

(other than waterfowl)

Prime Hook

Months of **January**

to April

19⁶⁶

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Great Blue Heron	Present all period, not more than 6.									
II. Shorebirds, Gulls and Terns:										
Herring Gull		1/1				4/30				1,000
Ring-billed Gull		1/1				4/30				500
Great Elk. Bk. Gull		1/1				4/30				200

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	1/1		1/1		100
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow	present all period up to 40 birds. present all period.				
Reported by <u>P. M. Hardy</u>					

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

5RF-10/64

Months of **May**

Refuge

Prime Hook

to **August 31**

19 66

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Great Blue Heron	*									
Common Egret	*									
Least Bittern	*									
Glossy Ibis	*									
American Bittern	*									
Cattle Egret	*									
Little Blue Heron	*									
II. Shorebirds, Gulls and Terns:										
Willet	*									
Greater Yellowlegs	*									
Woodcock	*									
King Rail	*									
Ruddy Turnstone	*									
Least Tern	*									
Black Skimmer	*									
*Noted as occasionally present in small numbers during the period. Infrequency of observations resulted in near meaningless <u>first</u> , <u>peak</u> , and <u>last seen</u> data.										

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Present all periods on acquisition area, up to 600 in late August.				
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Short-eared owl	Present all period in small numbers of less than 100.				
Reported by				Gordon T. Nightingale	

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1751
Form NR-1
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge PRIME HOOK

Months of September to December 1966

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production		(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young Estimated Number
I. <u>Water and Marsh Birds:</u>									
Great Blue Heron	Present early in period, not to exceed six (6).								

(over)

(1)	(2)		(3)	(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>								
Mourning dove	450	10/24	500	11/10	150	12 /31		500
White-winged dove								
IV. <u>Predaceous Birds:</u>								
Golden eagle								
Duck hawk								
Horned owl								
Magpie								
Raven								
Crow								
Present all period, numbers not in excess of 200.								
Short Eared Owl	21	11/29	5	12/23	3	12/31		25
Red Tail Hawk	1	11/3	3	12/23	3	12/23		25
Reported by						J. M. Srednicki		

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance.
- Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750b
Form NR-1B
(Rev. Nov. 1957)
5RF-10/64

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Prime Hook For 12-month period ending August 31, 1966

Reported by C. M. Hardy Title Asst. Refuge Manager

(1)	(2)		(3)	(4)	(5)	
Area or Unit	Habitat			Breeding		
Designation	Type	Acreage	Use-days	Population	Production	
#1	Crops		Ducks	25,749	8	20
	Upland	240	Geese	21,102	0	0
	Marsh	1,540	Swans	0	0	0
	Water	70	Coots	0	0	0
	Total	1,850	Total	46,851	8	20

#2	Crops		Ducks	84,604	78	198
	Upland	430	Geese	105,510	0	0
	Marsh	1,488	Swans	0	0	0
	Water	150	Coots	0	0	0
	Total	2,068	Total	190,114	78	198

#3	Crops		Ducks	220,708	4	10
	Upland	400	Geese	150,729	0	0
	Marsh	4,316	Swans	162	0	0
	Water	600	Coots	0	0	0
	Total	5,346	Total	371,599	4	10

#4	Crops		Ducks	36,784	0	0
	Upland	240	Geese	24,117	0	0
	Marsh	1,084	Swans	0	0	0
	Water	120	Coots	0	0	0
	Total	1,444	Total	60,901	0	0

TOTALS	Crops		Ducks	367,845	90	228
	Upland	1,310	Geese	301,458	0	0
	Marsh	8,458	Swans	162	0	0
	Water	940	Coots	0	0	0
	Total	10,708	Total	669,465	90	228

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) Area or Unit: A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) Habitat: Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) Use-days: Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) Breeding Population: An estimate of the total breeding population of each category of birds for each area or unit.
- (5) Production: Estimated total number of young raised to flight age.

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
Refuge in process of acquisition. Hunting not yet controlled by Refuge.								

INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 per cent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 per cent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spend hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 per cent.
$$\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$$

REPORT OF BANDING ON PRIME HOOK REFUGE - CALENDAR YEAR 1966

Geese	Method of Trapping*	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Totals
Canada														
Brant														
Ducks	No Banding Accomplished during FY '66.													
Mallard														
Black														
Gr.-Winged Teal														
Bl.-Winged Teal														
Wood Duck														
Eider														
Total Waterfowl														
Other														
Mourning Dove														
Woodcock														

Quotas: Canada geese _____; Mallard _____; Blacks _____; Other _____

*Method of Trapping: CAN - Cannon Net; CAGE - Cage; MIST - Mist Net; NITE - Night-lighting

3-1752
Form 1 2
(April 1946)

UPLAND GAME BIRDS

Refuge Prime Hook Months of January to April, 1966

(1) Species	(2) Density		(3) Young Produced	(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite	Occur within the approved acquisition area, and the total population is estimated to exceed 400 birds.								This area is in the process of acquisition. No full time field personnel yet assigned nor are acquisition acreages finalized.

5RF-8-64

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form 1 2
(April 1946)

UPLAND GAME BIRDS

Refuge Prime Hook Months of May to August, 1966

(1) Species	(2) Density		(3) Young Produced	(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs.'v'd. Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
This station is in the process of being acquired. There are no professional personnel stationed here. Bobwhite are the only known Upland Game Birds naturally present within the acquisition area.									

5RF-8-64

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1752
Form NR.
(April 1946)

UPLAND GAME BIRDS

Refuge PRIME HOOK

Months of September to December, 19 66

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods observed	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bobwhite Quail	Area in process of acquisition. Acreage not finalized.		-	-	Unknown	50*	0	0	400*	* Figures are estimates based on observations of permanent personnel. Hunting was un- controlled; therefore, no exact removal figures are available.
Ringneck Pheasant	Area in process of acquisition. Acreage not finalized.		-	-	Unknown	0	0	0	NTE 5	2 males observed on the Refuge area, last seen in early November.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey methods used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number of each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge PRIME HOOK

Calendar Year 1966

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Whitetailed Deer	Area in process of acquisition. Acreage not finalized.		5	0	0	0	None	Noted	0	-		40	40	Unk.

Remarks:

Reported by J. Srednicki

INSTRUCTIONS

Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Prime Hook

Year ending April 30, 1966

(1) Species	(2) Density		(3) Removals						(4) Disposition of Furs						(5) Total Popula- tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Permit Number	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
									Trappers Share	Refuge share					
Muskrat															200
Raccoon															50
Cottontail															400
Opossum															50
Fox, Red															75
Fox, Gray															10
Rough estimates based on cursory observations.															

* List removals by Predator Animal Hunter

REMARKS: This Refuge is in the process of being acquired, there are no full time field personnel assigned, and only limit cursory population data are available.

Reported by C. M. Hardy

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

DISEASE

Refuge PRIME HOOK

Year 1966

Botulism

Lead Poisoning or other Disease

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks None Noted.

Kind of disease Lead Poisoning

Species affected Canada Geese

Number Affected

Species	Actual Count	Estimated
<u>75 Canada Geese</u>	<u>20</u>	<u>75</u>
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost 75

Source of infection Lead

Water conditions Heavy Ice cover

Food conditions Food shortages

Remarks *Assumed to have died from Lead Poisoning,

as did specimens submitted to Patuxent from Bombay Hook Refuge and other mortality areas in Delaware.

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge PRIME HOOKCalendar Year 1966

1. Visits

a. Hunting 870 b. Fishing 350 c. Miscellaneous 1,775 d. TOTAL VISITS 2,995

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	750	3,500	*
Upland Game	90	500	*
Big Game	30	500	*
Other			

* Refuge owned not under management.

Number of permanent blinds -0-Man-days of bow hunting included above -0-Estimated man-days of hunting on lands adjacent
and within Acquisition Areas not yet owned
to refuge 1,200

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	-	-
Streams and Shores	-	2

1c. Miscellaneous Visits

Recreation	<u>900</u>	Official	<u>125</u>
Economic Use	<u>750</u>	Industrial	<u>-</u>

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	ON REFUGE		OFF REFUGE	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific			1	30
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	-	Radio Presentations	-
Newspapers (P.R.'s sent to)	-	Exhibits	-
TV Presentations	-	Est. Exhibit Viewers	-

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Refuge PRIME HOOK Year 19 66

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
No Nonagricultural collections, receipts or plantings during calendar Year 1966.													

- (1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: _____

3-175⁸

Form 1 .8

(Rev. Jan. 1956)

5RF-10/64

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge PRIME HOOKCounty SussexState Delaware

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Corn	47.3	1,040 bu.			4.7	120 bu.	52.0	Establish permanent grass sod	40.8
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations 3 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Orchard grass/clover	.5	2	-	1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				94.8
Hay - Wild	-	-	-	2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or state.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

Refuge PRIME HOOK Year 1956

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
Only timber removal within acquisition boundary consisted of pine cutting on Tract 86, still in private ownership.								

No. of units removed B. F. Unknown Method of slash disposal.....

Ties.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge

PRIME HOOK

Proposal Number

PH-66-1

Reporting Year

1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Dates of Application	List of Target Pests(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 17	Salt Marsh Mosquito (Aedes sollicitans)	Tract 12 East of Slaughter Canal	465	Dibrom	232.5 gal.	.05 lbs./A.	#2 Fuel Oil 2 Qts/A.	Fixed Wing Aircraft
June 29	Salt Mosquito Mosquito (Aedes sollicitans)	Tract 12 - east of Slaughter Canal	465	Dibrom	232.5 gal.	.05 lbs./A.	#2 Fuel Oil 2 Qts./Acre	Fixed Wing Aircraft

10. Summary of results (continue on reverse side, if necessary)

Both Dibrom at .05 lbs./Acre and Abate at .032 lbs./Acre, were applied by the State within the acquisition area; but not on refuge owned lands other than that cited above.

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge

PRIME HOOK

Proposal Number
PH-66-3

Reporting Year
1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Dates of Application	List of Target Pests(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May 27	Broadleaf Weeds in corn cropland	Refuge Crop lands under cooperative farm agreements.	52.0	2,4-D Butoxyethanol Ester, low volatile	26 lbs.	.5 lbs/A.	Water 10-30 gal./A.	Boom Drop Nozzle Sprayer

10. Summary of results (continue on reverse side, if necessary)

Minimized weed competition for nutrients during periods of growth and maturation, when corn was too tall to cultivate mechanically. Increases yield. Supplements mechanical cultivation.

A sample of several newspaper clippings in regard to the progress in lands acquisition. Progress during the past year has been less than spectacular and for this reason, newspaper publicity of our "progress" has not been encouraged.

Wildlife refuge progress is cited

From the Sussex Bureau

PRIME HOOK—Prime Hook, the proposed 10,700 - acre federal wildlife refuge northeast of Milton, is "moving along, though not with any great speed," its manager said yesterday.

Gordon Nightingale, presently managing both Prime Hook and Bombay refuges, said about 4,000 acres had been "buttoned up" for the once controversial federal undertaking.

Nightingale said he hopes a new manager will be hired for Prime Hook within three to four months.

The government is recruiting from its civil service lists for a resident manager, he said.

NIGHTINGALE predicted the possibility of a "major breakthrough" in land acquisition in the near future. Though the rate of real estate purchasing in the

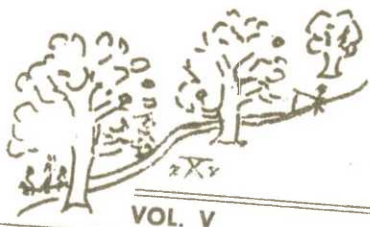
area has been favorable, some opposition has kept it at a gradual pace, he said.

The refuge manager said he did not want to be more specific since the actual land - purchasing is being handled by Donald Bredernitz, of the Boston office of the U.S. Fish and Wildlife Service.

Bredernitz is on vacation and could not be reached for comment. He is expected to visit Prime Hook in mid-April.

The refuge, situated between Broadkill Creek and Slaughter Beach Road, is open to the public. Nightingale noted that the land is posted as federal property, but there are no "no trespassing" signs.

A MORE substantial program for opening the area to the public will not materialize until a solid manageable tract — 3,000 to 4,000 acres—is obtained.



Newark Pushes Recreation Via GNRA

Park Head Gives Progress Report

Ralph S. Cryder sees tremendous potential for future development in the New Castle County park system. To support this statement, Cryder gave a progress report at the March board meeting of the Citizens Committee for Parks, Inc.

Cryder pointed out that last July 1, the New Castle County Parks and Recreation Department was responsible for maintaining 91 park tracts, or 843 acres of land. The estimated figure for July 1, 1966, has jumped to 101 tracts with a total of 1,032 acres. If the present rate of growth is maintained, the department expects to control 1,747 acres by the same July date in 1967.

As the county's new director of parks and recreation, Cryder and his department took a mass inventory of all parkland under their control in an effort to help provide the Commission and Levy Court with enough information to establish immediate and long-range guidelines for the acquisition and development of existing and future park sites. The department also wanted to indicate the need for increased recreation programs and maintenance of park sites already owned by the county.

To maintain the present sites, Cryder said several satellite maintenance bases will be constructed, one at Delcastle Farms and a second at Alapocas Woods. These two bases, expected to be operational by July, will permit more efficient service to the northern and western sections of the county.

To staff these bases and existing parks, the department is cooperating with the State Department of Welfare in instituting a work experience and training program financed by federal funds. The program, scheduled to get under way this month, will provide for 20 men to work for one month and 10 men for each six months.

Although optimistic about park development, Cryder did express some concern about the lack of adequate funds for major development.

(Continued on page 2)



RALPH CRYDER

Cryder Lands Top Post in County

Thirty-year-old Ralph Cryder brings eight years of experience to his new job as director of the New Castle County Parks and Recreation Department, a position he assumed February 1.

Prior to his move to Delaware, Cryder spent 4½ years as county director of parks and recreation in Red Bank, N.J. For his activities there, he won a certificate of appreciation from the state for advancement of recreation.

Cryder graduated in 1957 from Pennsylvania State University with a bachelor's degree in recreational education. He served as recreation director at a year-round resort in Valeria, N.Y., and 2½ years as assistant superintendent of recreation of the Caldwell-West Caldwell Recreation Commission at Caldwell, N.J.

Land Acquisition Reaches 40%

Land acquisition for the federal wildlife refuge in Prime Hook has reached 40 percent of its 10,700 acre-goal with a major breakthrough in acquisition expected soon by Gordon Nightingdale, manager of both the Prime Hook and Bombay Hook Wildlife Refuges.

City Slow Acquiring Park, Flood Land

Although the city of Newark has been giving its recreational program mostly lip-service, according to city councilman Francis Sullivan, the Greater Newark Recreational Association has built a healthy program of leisure time activities.

Councilman Sullivan, chairman of the city's parks and recreation commission, thinks the city has been dragging its feet on acquiring land that could be used for parks and flood control.

He cites the need for flood path zoning on the White Clay, Red Clay and Christina creeks. He said builders are putting up structures on land that should be kept open for flood flow. Because the state has been in the dry part of the rain cycle, there has not been a flood to alert people to this danger.

A vast amount of potential damage and loss could be avoided by flood path zoning at this time. Between floods, the land could be used as parks, according to Sullivan.

At the present time, Newark has 25 acres throughout the city marked for park use but Sullivan says much of this land is not suitably located for this purpose.

The eight-acre College Park, located southwest of the city between Elkton Rd. and the B. & O. railroad, was acquired by the city seven years ago and is just now being developed for park use. Sullivan anticipates that the tennis courts, ball fields and tot play area will be in use this summer.

The responsibility for developing a first class recreational program has been assumed by the Greater Newark Recreation Association Inc., GNRA. Since its organization in 1946 the GNRA has grown to the point where it provides 55 different activities, including some for every age group.

In 1965 the association's income was \$62,250 with 64 percent of the total given by the United Community Fund. The

(Continued on page 3)

A sample of several newspaper clippings resulting from Refuge Revenue Sharing Act disbursements to Sussex County.

Prime Hook Cash Helps Two Schools

From the Sussex Bureau

GEORGETOWN — The federal Refuge Revenue Sharing Act has resulted in a \$6,338 grant to be shared by the Milford and Milton School Districts.

The two Districts include portions of the new Prime Hook Wildlife Refuge, and under the refuge act the county involved is entitled to a share of its profits. The money is to be used for highway or school purposes.

The money was delivered to the Sussex County Levy Court yesterday by Gordon C. Nightingale, manager of the federal refuge.

Kent County, in recent years, has received smaller sums from the federal government in connection with Bombay Hook Refuge. Nightingale noted that Kent's policy had been to turn the money over to the Smyrna School District.

SUSSEX Commissioner Martin W. Johnson Jr. suggested "in as much as certain schools have lost revenues as a result of the refuge, why don't we just give it to the schools affected?"

A quick check with the Board of Assessment office showed Milford and Milton to be the only two districts apparently in line for the money.

Townsend, with the agreement of the other commissioners, directed that the Board of Assessment, assuming the projected growth of the refuge, mathematically determine how much each district was entitled to.

Judging by school district map used in the assessment office, Milton will probably receive approximately two-thirds of the money.

Milton Schools Get Refuge Cash

From the Sussex Bureau

MILTON—The Milton School District is to receive a \$5,354 financial windfall, according to the Sussex County Levy Court.

The Milford School district, on the basis of a levy court motion yesterday, will receive \$983, based proportionately on the amount of its property affected by prime hook refuge.

A week ago, Gordon C. Nightingale, manager of the federal wildlife refuge, delivered a government check for \$6,338 to the county aides, explaining that the money is to be used only for highway improvement or school purposes.

The Board of Assessment, asked by the commissioners to determine to what percentage each district was affected by the refuge, advised yesterday that Milton was entitled to the largest portion.

This proposal is going ahead
when constructed it will
be about 6 miles North
of the Penn's Hook Refuge

State News, Dover, Del., Monday, August 1, 1966—17

Week-End Round-Up

B. Houk

SINCLAIR SHIPS TO DOCK AT SEA—Sinclair Refining Co. has released plans to build a marine terminal some seven miles out in the Delaware Bay in order for its big oil tankers

to dock. The oil would be pumped through submerged pipelines to a depot in the Milford area, then to be re-routed through another submerged pipeline along the Delaware coast up to Pennsylvania refineries. The project is still two years away from being undertaken, but plans to acquire about 2000 acres for the depot are now being formulated.

The seven-mile line is the alternative to dredging the Delaware River deeper to allow the tankers to navigate up its channel.

DRIVER DEATH

Discover Wonderful Delaware along the shores of delaware bay

To continue our catalog of hints for the discovery of Wonderful Delaware's wonderful bayside:

At Little Creek, just beyond the oyster boats, is the road to Port Mahon, another fishing village on the shore of the bay. This is also the way to get into Little Creek wildlife area.

Where Rte. 9 runs into Rte. 113, the Dover Air Force Base is to your right, with the twentieth century roaring overhead every few minutes. But to your left is an oasis from the past—The John Dickinson Mansion. Built in 1740, it was the home of "the penman of the Revolution." House and garden have been beautifully restored and are open to the public.

Turn east again, away from Rte. 113, and take the road to Kitts Hummock, a quiet but growing bayside summer settlement. What's an old Wilmington trolley car doing here.

At the Drawbridge where Rte. 113 crosses the St. Jones river there's a nice picnic place, even a swing for the children. Keep

a sharp eye out to the right to glimpse a collection of rare ducks, swans, geese on a small pond.

Just south of Little Heaven is the road to Bowers, a fishing port at the mouth of the Murderkill. Bowers is quite a town—stores, restaurants, a big public launching ramp, and a good place to charter a fishing party boat. Just across the Murderkill, close enough to shout but 12 miles away by road around the marshes, is Bowers Beach, or South Bowers according to the signs.

Back on Rte. 113, just north of Frederica, is Barratt's Chapel, built in 1780, and known as "the cradle of Methodism." The chapel is well worth a visit and the extensive graveyard should be explored—it holds much of Delaware's history.

Below Frederica the first road to the east goes to South Bowers, or to Thompsonville, from which you really ought to go to Bennetts Pier. No pier. Nothing but a stretch of wild and lonely beach, but the fishing

there is superb, they say.

The road from Thompsonville to Big Stone Beach is one of the prettiest, first through woodland with flowers bursting at the road on either side, then out over the marshes.

At Milford, Rte. 36 leads east toward Slaughter Beach. Just before reaching the shore turn north on a good road to Mispillion Light. The old lighthouse is still there, with the new light right beside it. Here's a good place to rent a boat or charter one for fishing, and there's a public launching ramp as well. The Corps of Engineers are busy repairing the North Jetty. Slaughter Beach is a thriving, up-to-date community, with many new beach homes being built. There's quite a welcome for visitors, here.

Below Slaughter Beach, the first road south leads into the Prime Hook Wildlife area, as beautifully untouched as anywhere in Delaware. The road marked "Prime Hook Neck" leads through the wild marshes to a solitary bayside beach with

not a soul or a house in sight, not a sound but the waves and bird voices.

Farther south is Prime Hook Beach, also reached through the wildlife area by what appears to be a new road. A small, fresh paint-looking hideaway.

Broadkill Beach, just to the south, is a nice old place, beloved by several generations of Delawareans.

And beyond Broadkill is Lewes, another wonder of Wonderful Delaware that must have its own story told.

Starting July 1st
Haircuts in all
Smyrna Barber Shops
will be \$1.75

Children under 12, \$1.50

Vance Cole
Dave Blatt
James Kruchen
John Byrnes

DUDLEY LUNT

Development at Lewes

Prime Hook

A correspondent has written from Lewes of a plan that is afoot to utilize a marsh there for a building development.

A marsh, a park, a river, a pond—any site of natural beauty is, in these days of creeping congestion, a target for the entrepreneur whose interest is largely commercial. Indeed it can almost be said that the vital issue of land use in our society is determined by the operation of the profit motive. But not quite. Today there are checks on this unfettered spoliation of man's environment. The ambitious schemes for planning are one. Zoning requirements constitute another. An affronted public opinion is still another. And so likewise there is the question of public health.

As time goes on, the dissident views of those who fear the destruction of the civilized ecology where they live will increase in number and in volume. This for the reason that modern man is becoming increasingly aware of the fact that not a little of the development of his day and age, while it makes a profit for the owner and the entrepreneur, tends to impoverish him and his neighbors. As site after site of natural wildness, beauty, and use is turned over to real estate development, industrial undertakings, or what not, the life of modern man becomes poorer and poorer.

"The town," wrote Henry Thoreau in the 1840s, "is but little conscious how much interest it has in the river, and might vote it away any day thoughtlessly."

Today his statement would require qualification. The word "thoughtlessly" would have to come out of the context. The selectmen of today know that any scheme to despoil the

natural beauty of the Concord River and its two sources, the Sudbury and the Assabet, would instantly raise a public ruckus on a large scale. For this is exactly what they did encounter some years ago when these town fathers attempted to turn the wild shore of Walden Pond into a public bathing beach. The scheme was roundly defeated.

This invasion of a marsh at Lewes is symptomatic of what is threatening to occur all along the shore of the Delaware River and Bay. The marshes that line that shore constitute a unique natural asset of this small state. In their present state, they also constitute a guarantee of a normal and healthful development of the bordering upland that makes up the rest of the watershed which is the state of Delaware. Per contra, if these marshes are devoted to a building development here, to a refinery there, and to some other large industrial installation elsewhere, the shoreline from the canal to the sea will in time suffer the same kind of spoliation that has ruined the tidal environs of northern New Jersey. Witness the Raritan River, the Hackensack Meadows and the shore of the Delaware River at Chester and Marcus Hook.

The existing wildlife refuges at Primehook, Bombay Hook, and Woodland Beach are a buffer against these unwanted incursions. In their creation, the prices of private landowners had to be met; and it is, of course, obvious that if the shores of the river and bay are to be made secure from destructive forms of development, the price will have to be paid.

For, as has been said and as is obvious, it is the dollar sign that ultimately determines the issue of land use.

*Morning News Wilmington Del 1/1/66
B Hook*

What about the hunters

After reading in the April 4 Morning News that the government is making good progress in obtaining land for the Prime Hook wildlife refuge, I turned the page and read where Laurel has approved establishment of still ~~an~~ other one.

It appears that in a few years, Delaware will be the safest place around for water fowl, but it sure will be a poor (poorer) place for Delaware hunters. It is nice of us to provide water fowl with a whole state of safety, but who is going to pay for it when the Delaware hunters all start buying out-of-state licenses?

I wonder how many of these do-gooders that back the forceful acquisition of private land would feel if the land were theirs. They are killing the last few years of private hunting in Delaware and only a few land owners in the Prime Hook area are opposing them. Let's back them up.

GARY J. WALTON

Wilmington

Circling Sussex

With CONSTANCE BROWN



There may be a new day soon for the Canada geese who have for centuries been using Delaware as part of their migratory corridor.

The poor things have been dying off in Delaware of late, with some 2,000 meeting death from causes other than shooting in Delaware alone last year.



Constance Brown

There were many rumors about how all these deaths happened, but it was eventually believed that the geese died from lead poisoning developed from eating shotgun pellets. Apparently they gobbled up the pellets along with gravel as aids to their digestion.

The lead poisoning idea was fully accepted months ago, but Norman G. Wilder, director of the State Board of Game and Fish Commissioners, told me that he has finally received formal and written reports verifying this.

What to do about it? There seems only one answer though it is surprising.

Industry is working to find a substitute for the lead pellets. Everyone admits that lead is the best material from the shotgun point of view but some other material can surely serve the same purpose and not kill off the birds.



Incidentally, the recreational spots provided by the game and fish commission will be formally opened for the season tomorrow.

They have actually never been closed but their sanitary equipment and other features were removed for the winter. There has been a lot of clearing up at the many pond sites and at the Assawoman Wildlife Refuge.

Del. mosquito war called archaic, tied to politics

From the Dover Bureau

DOVER — A Delaware Wildlife Federation official yesterday challenged predictions by Ernest A. Davidson, State Highway Department operations director, that victory could be achieved in the War on Mosquitoes.

Edmund H. Harvey, affiliate representative of the federation, said the highway department's program is entwined in politics and based on methods used by

the Civilian Conservation Corps 30 years ago.

Davidson has said that victory in the state's \$2-million mosquito war can be reached this year if there are no heavy rains.

"This comes as great news to everyone except those who are hoping for an end to the drought," said Harvey.

He insisted that the only places modern mosquito control methods are being used are the

federal wildlife refuges at Bombay Hook and Prime Hook.

"Until mosquito control is divorced from politics and until a project control committee consists of members who are not all state employees, Delaware cannot expect to have a first-rate mosquito control program.

"Meanwhile, the current program will proceed with no more than token concern for its effects on wildlife and marine resources," Harvey said.



Thursday

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Game Member Hits Bill to Add 6

From the Dover Bureau
DOVER—A proposal to enlarge the Board of Game and Fish Commissioners is motivated solely by politics, the Republican commission member charged today.

Raymond C. McDowell of near Wilmington referred to a bill introduced in the House yesterday

by Rep. Ralph D. Edmanson, D-Newark, which would increase the number of commissioners from three to nine.

The three-member board has two Democrats, chairman C. Parker Wheatley of Laurel and Franklin N. Tarburton of Wyoming, and one Republican. The enlarged board would have no

more than six members from the majority party.

NEITHER Wheatley nor Tarburton could be reached for comment.

Edmanson said that the traditional practice of appointing the Republican member from New Castle County in Democratic administrations has left coun-

ty Democrats without representation.

McDowell, however, said, "Some of the politicians aren't happy with the decisions of the present member."

He said the bill is "the aftermath" of the commission's decision last year to approve federal acquisition of marshland

for the Prime Hook Wildlife Refuge.

The decision irritated "many Sussex County politicians," he said.

"MAYBE they thought it would look better for the bill to come from New Castle County," he said.

McDowell has been on the com-

mission since last fall when he replaced Rodney M. Layton of New Castle County, who declined reappointment when his term expired in September.

Under the bill, the governor would continue to appoint all the members—there is no mention of senatorial confirmation—for terms of six years, but any place in the state.

the three holdover members would be allowed to serve out their terms.

Each of the four political subdivisions—Wilmington, the rest of New Castle County, Kent County and Sussex County — would have two members on the board and the governor could appoint the ninth member from any place in the state.

Split shoreline for 3 uses, state planners suggest

By CY LIBERMAN

A plan for splitting up Delaware's shoreline for recreation, conservation and industry has been prepared by the State Planning Office.

The shoreline plan is a part of the comprehensive development plan for the state, said John A. Bivens Jr., planning office director. "It is intended as a guide for the future development of the entire shoreline in a manner that will insure the best utilization of this extremely valuable resource," he said.

Recreation should be the predominate use of the ocean and bay lands from Lewes south to the Maryland line, the plan suggests. "The area from Port Penn to Lewes is predominantly marsh land of high value to wildlife and should be preserved for conservation uses to the greatest extent possible," the report says. The area north of Port Penn is pictured being devoted to urban activities, mainly industrial.

"It is recognized, that there is a mixture of uses within the three areas, but the predominant use in each area will be as outlined . . ." the planning report says.

The recommendation that the marshlands south of Port Penn be preserved appears to be at variance with New Castle County's comprehensive development plan, which suggests several areas along the shoreland east of Odessa be used for industrial sites.

Goals adopted in the preparation of the plan include:

The provision of water-oriented recreation for Delaware residents and for visitors to Delaware.

The protection of marsh areas for wildlife, fish and shellfish conservation.

The encouragement of deep-water-oriented industrial activities in appropriate locations.

A SCENIC highway from Delaware City to Rehoboth Beach is another major proposal of the plan. The highway would use the route of existing Delaware 9 as far as it goes — south of Little Creek. Further south it would be a new road along the shore, connecting Bowers, Slaughter Beach, Broadkill Beach, Lewes and Rehoboth.

Other highway improvements also are urged to provide a system of access routes to the southeastern Sussex County resort area the plan would further develop.

Several ideas for development of the Cape Henlopen area, with a combination of residential, industrial, commercial and recreational installations is suggested if the federal government would give up its remaining 804 acres of land. They separate two state-owned areas — Cape Henlopen State Park and the Gordon Pond area. Adding the federal land would make a facility of 2,452 acres with 4½ miles of ocean beach.

"THE state-owned beaches between South Bethany and Fenwick Island, along with Cape Henlopen, are the most important recreation resources in Delaware," the report says. It suggests designs for camp sites, parking and sanitary facilities, but warns against over-development.

Resort area development on the shores of Indian River and

Rehoboth Bay also are recommended. A development proposal for the Longneck area of Indian River Bay east of Lingo Creek is included in the plan as the kind of development to encourage along the shoreline of the bays. It suggests dredged lagoons for waterfront homes, wooded areas with campsites, and several areas where motels, restaurants, parking lots and swimming beaches would be concentrated. Some state-owned camping and boating access facilities are included in the plan, but most of its suggests private development. The lagoons would be produced by dredging, bulkheading and filling.

Commenting on the marshlands north of Lewes, the report says: "The marshes are valuable, not only in terms of waterfowl, but as a part of a complete ecological system. The vegetation in the marshes, the waterfowl, and the many forms of aquatic life in the bay are all interdependent. Changes to the marshes can directly affect the fish population." The report notes that both the federal and state governments have wildlife refuges along this section of shoreline.

Reclamation of abandoned borrow pits near the resort areas is recommended. They can be used for parking, target shooting and other activities, the report says.

It says proper development of the shore area can be fostered "by county, or possible, state zoning." New Castle County is the only county exercises zoning power at present, and the state does not now exercise control over land use through zoning.

*This Road
would traverse
the shoreline of
the Prime Hook N.W.
Refuge*

Errection of refuge entrance sign. Three up
and seven more to go - as land is acquired.

An unblemished SAFETY Record since Refuge was
staffed. Safety Record sign on interim refuge
workshop.



Prime Hook Refuge Staff

Asst. Manager Jerome Srednicki - right rear
Maintenance man William Sipple - left rear
Clerk-typist Alice Wright - - - right front
Temporary Maintenance man Otis Clifton - left front

Prime Hook Student Asst. - Thomas G. Mitchell

